

CLAIMS

1. An apparatus for providing carbon dioxide to a plant, comprising:
- 5 (a) a chamber adapted to enclose at least a portion of said plant;
- (b) a gas source capable of providing gas substantially free of carbon dioxide; and
- 10 (c) a carbon dioxide generator in fluid communication with said chamber and said gas source, said generator comprising a vessel containing an aqueous solution of at least one of hydrogen carbonate ions and carbonate ions.
- 15 2. The apparatus of claim 1 wherein said generator further comprises an agitator capable of agitating said solution.
- 20 3. The apparatus of claim 2 wherein said agitator is an inlet to said vessel in fluid communication with said gas source.
- 25 4. The apparatus of claim 1 wherein said generator further comprises a fan.
5. The apparatus of claim 1 wherein said generator has a loading section for addition of a solid source of at least one of hydrogen carbonate ions and carbonate ions.
- 30 6. The apparatus of claim 1 wherein said chamber has a carbon dioxide content of from 0 to 4000 ppm.
- 35 7. The apparatus of claim 1 wherein said generator further comprises a source of acid.

8. A method for providing carbon dioxide to a plant, comprising:

- (a) forming a chamber and enclosing at least a portion of said plant with said chamber;
- (b) providing a gas source capable of providing a first gas substantially free of carbon dioxide;
- (c) providing a carbon dioxide generator in fluid communication with said chamber and said gas source, said generator comprising a vessel containing an aqueous solution of at least one of hydrogen carbonate ions and carbonate ions;
- (d) producing carbon dioxide from said aqueous solution; and
- (e) mixing said carbon dioxide with said first gas to produce a gas mixture having a level of carbon dioxide and flowing said gas mixture into said chamber.

9. The method of claim 8, further comprising the step of agitating said solution to produce said carbon dioxide.

10. The method of claim 9 wherein said step of agitating said solution comprises flowing said first gas through said aqueous solution.

11. The method of claim 8, further comprising the step of adding an acid to said solution to produce said carbon dioxide.

12. The method of claim 8 wherein said generator further comprises a fan.

13. The method of claim 8, further comprising the step of adding a solid source of at least one of hydrogen carbonate ions and carbonate ions to said generator.

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14. The method of claim 8 wherein said chamber has a carbon dioxide content of from 0 to 4000 ppm.

15. A method for providing an elevated level of carbon dioxide to a plant culturing environment, comprising:

- (a) forming an enclosure to surround said plant;
- (b) providing a carbon dioxide generator in fluid communication with said enclosure, said generator comprising a vessel containing an aqueous solution of at least one of hydrogen carbonate ions and carbonate ions; and
- (c) producing carbon dioxide from said solution in a sufficient quantity so as to elevate the level of carbon dioxide in said enclosure above ambient level.

16. The method of claim 15, further comprising the step of agitating said solution to produce said carbon dioxide.

17. The method of claim 16 wherein said step of agitating said solution comprises flowing a gas through said aqueous solution.

18. The method of claim 15, further comprising the step of adding an acid to said solution to produce said carbon dioxide.

19. The method of claim 15 wherein said generator further comprises a fan.

5 20. The method of claim 15, further comprising the step of adding a solid source of at least one of hydrogen carbonate ions and carbonate ions to said generator.

10 21. The method of claim 15, further comprising the step of flowing said aqueous solution through said vessel.

15 22. The method of claim 15 wherein said enclosure is a greenhouse.

23. A method for providing carbon dioxide to an environment, comprising:

- 20 (a) placing a carbon dioxide generator in said environment, said generator comprising a vessel containing an aqueous solution of at least one of hydrogen carbonate ions and carbonate ions;
- 25 (b) agitating said solution to produce carbon dioxide, wherein said carbon dioxide is produced without addition of acid to said aqueous solution; and
- 30 (c) producing carbon dioxide from said aqueous solution in a sufficient quantity so as to elevate the level of carbon dioxide in said environment.

24. The method of claim 23 wherein said step of agitating said solution comprises flowing a gas through said aqueous solution.

35 25. The method of claim 23 wherein said generator further comprises a fan.

26. The method of claim 23, further comprising the step of adding a solid source of at least one of hydrogen carbonate ions and carbonate ions to said generator.

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27. The method of claim 23, further comprising the step of flowing said aqueous solution through said vessel.

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28. The method of claim 23 wherein said environment is a plant culturing environment.

29. An apparatus for providing carbon dioxide, comprising:

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(a) a vessel containing an aqueous solution of at least one of hydrogen carbonate ions and carbonate ions, said vessel comprising an agitation section;

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(b) an agitator adapted to agitate said solution;

(c) a water source in fluid communication with said vessel for supplying water to said vessel; and

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(d) said vessel having a drain to allow said aqueous solution to flow out of said vessel.

30. The apparatus of claim 29, further comprising a loading section.

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31. An apparatus for generating carbon dioxide, comprising:

(a) a chamber;

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(b) a carbon dioxide generator in fluid communication with said chamber, said generator comprising a first section containing an aqueous solution of at least

one of hydrogen carbonate ions and carbonate ions and a second section containing an acidic solution; and

- (c) a wick disposed between said first section and said second section.